

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: JANS, Manfred Ernst

SERIAL NO.: (International Serial No. PCT/EP99/06454)

FILED: Herewith (International Filing Date: September 2, 1999)

TITLE: PERMANENT MAGNETIC LIQUID TREATING DEVICE

REMARKS ON PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In this preliminary amendment, please consider the following remarks in conjunction with the amendments to the above-identified application as follows:

REMARKS

The present Preliminary Amendment has been entered for the purpose of placing the application into a more proper U.S. format. In particular, certain grammatical and idiomatic inconsistencies have been corrected by amendment to the specification, and the application is corrected for certain typographical errors found in the originally submitted application. No new matter has been added by these amendments. The present application incorporates the original filing including any amendments made in the annex to the International Preliminary Examination Report and changes to the drawing sheets.

The Claims have been amended so as to conform with U.S. requirements and so as to remove multiple dependent claims.

Applicant respectfully requests that the present Amendment be entered prior to an initial Official Action on the present application.

2-25-02
Date

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES in the PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In conjunction with the filing of the present application, and prior to an initial Official Action on this matter, please amend the above-identified application as follows:

IN THE SPECIFICATION

In Paragraph [0002], the paragraph has been amended as follows:

A1
A permanent magnetic liquid treating device of this kind is known by German Patent No. DE 195 32 357 A1 and this document forms the basis of the pre-characterizing part of claim 1. Such devices, which are also known from other patent documents, are used especially for the magnetic treatment of water in order to avoid the formation of lime deposits at the inner wall of pipes and tanks by causing that the calcium carbonate which is dissolved in the water is deposited not at the walls but in the form of separable fine particles.

In Paragraph [0007], the paragraph has been amended as follows:

A2
Further features and advantages of the invention will become apparent by the following description of an embodiment, by way of example, and without limitation, referring to the attached [drawings which show:] drawings.

In Paragraph [0008], the paragraph has been amended as follows:

Fig. 1 a [schematic] schematic view of an axial longitudinal section of a liquid treating device according to the invention, the strip being shown in side [view;] view.

A3 In Paragraph [0009], the paragraph has been amended as follows:

Fig. 2 is a schematic view of the arrangement of the ring magnets of fig. 1 without the housing and inner [tube;] tube.

In Paragraph [0010], the paragraph has been amended as follows:

Fig. 3 and 4 [a detail] are detailed plan views of two other embodiments of the inlet terminal part of the strip of the device of fig. 1.

IN THE CLAIMS

In Claim 1, the claim has been amended as follows:

1. (Amended) A permanent magnetic liquid treating device (1) comprising
a tubular housing (2) in which ring magnets (3) and magnetizable spacer discs (4) are located, coaxially to the longitudinal axis of the housing, and which [has] comprises connecting pieces (5) at both ends, and comprising means causing a spiral motion of the liquid passing therethrough, and

A4 an inner tube (6) which is located in the housing, coaxially to the longitudinal axis thereof and at a distance from the inner wall of the housing, the ends of said inner tube being connected liquid-tightly to said connecting pieces, the liquid to be treated flowing through said inner tube, and the ring magnets (3) and spacer discs (4) being installed in the liquid-free space between the inner tube (6) and the tubular housing (2) in such a way that they lie one behind the other in the direction of the longitudinal axis of the housing, [characterized by the following features:]

[a] the] wherein said tubular housing (2) [consists] is comprised of a non-magnetizable material;

[b] the] wherein said inner tube (6) [consists] is comprised of a magnetizable rustproof metal;

[c] the] wherein said tubular connecting pieces (5) [consisting] comprised of a magnetizable rustproof metal extend the inner tube (6) and form a single piece therewith;

[d] the] wherein said ring magnets (3) which are identical to each other are arranged in the ring space between the housing (2) and the inner tube (6) so that, beginning from the liquid inlet (E), there [follow,] follows, after a single spacer disc (4), a ring magnet (3) with its south pole directed towards the inlet, then, each time after two single spacer discs (4), three ring magnets (3) with the polarity inverted from one to the next, and at last two twinned ring magnets (3a, 3b), again with polarity inverted in relation to the preceding ring magnet and to the following twinned ring magnet, the single ring magnets (3a, 3b) which [constitute] comprise each twinned magnet contacting each

other with opposite poles so that a south pole is at the outside of the stack, and a final thicker spacing disc (4)[.];


[e] the] wherein a complete stack of ring magnets (3) and spacer discs (4) is held immovable and tightly enclosed in the housing (2) by means of sleeves (9) screwed upon the connecting pieces (5);

[f] in the] wherein said inner tube (6) [there is] fixedly [held] holds a strip (7) [consisting] comprised of a magnetizable rustproof metal having a width corresponding to the inner diameter of the inner tube (6), said strip being wound to a helix with 1 to 3 turns; and

[g] the] wherein said metal strip (7) extends with each one of its end sections (8) into the connecting pieces (5), said end sections being without helix and diametrically opposed.

In Claim 2, the claim has been amended as follows:

2. (Amended) A permanent magnetic liquid treating device according to claim 1, characterized in that the housing (2) [consists] is comprised of aluminum or an aluminum alloy and that the inner tube (6), the connecting pieces (5) and the end sleeves which are screwed upon the threading of the connecting pieces consist of special steel.

 In Claim 3, the claim has been amended as follows:

3. (Amended) A permanent magnetic liquid treating device according to [one of claims 1 or 2, characterized in that the] Claim 1, wherein an axial dimension of each ring magnet (3) is 9 mm and that of the spacer discs (4) is 3 mm, and the last spacer disc (4) at the outlet side having a thickness of 6 mm.

In Claim 4, the claim has been amended as follows:

4. (Amended) A permanent magnetic liquid treating device according to [any of claims 1 to 3, characterized in that the] Claim 1, wherein said inner tube (6) has a diameter of 0.5 inch (12.6 mm) and a length of 100 mm. and that the helically wound strip (7) being prepared from a sheet of special steel of 0.5 mm thickness has 1 to 2 helix windings in the inner tube.

In Claim 5, the claim has been amended as follows:

5. (Amended) A permanent magnetic liquid treating device according to [any of the preceding claims, characterized in that] Claim 1, wherein an elastic sealing ring (10) surrounding the inner tube (6) is inserted between each of the outwardly last spacer discs (4) and the adjacent sleeve (9).

In Claim 6, the claim has been amended as follows:

6. (Amended) A permanent magnetic liquid treating device according to [any of claims 1 to 5, characterized in that the] Claim 1, wherein said helically wound strip (7) is smooth or [provided with] comprised of projections which serve to create turbulence within the liquid flowing therethrough.

In Claim 7, the claim has been amended as follows:

7. (Amended) A permanent magnetic liquid treating device according to [any of the claims 1 to 6, characterized in that the] Claim 1, wherein said helix-free diametrical terminal section (8) of the metal strip (7) at the inlet end extends outwardly from the connecting piece (5) and terminates in a tip (14) with rounded straight edges or in a rounded tip (12) with a rounded round edge (12a).

AK
In Claim 8, the claim has been amended as follows:

8. (Amended) A permanent magnetic liquid treating device according to [any of claims 1 to 7, characterized in that] Claim 1, wherein at least the edges (14a, 12a) of the tips (14, 12) of the strip (7) have a coating of plastics material.

In Claim 9, the claim has been amended as follows:

9. (Amended) A permanent magnetic liquid treating device according to [any of the claims 1 to 8, characterized in that] Claim 1, wherein both sides of the strip (7) are covered with a plastic coating.

In Claim 10, the claim has been amended as follows:

10. (Amended) A permanent magnetic liquid treating device according to [any of the claims 1 to 9, characterized in that] Claim 1, wherein an insert (11) which reduces the flow section is arranged in the connecting piece (5) which is situated at the outlet side.

In Claim 11, the claim has been amended as follows:

11. (Amended) A permanent magnetic liquid treating device according to [any of the claims 1 to 10, characterized in that the] Claim 1, wherein said terminal outer part of the connecting pieces (5) is [provided with] comprised of a threading or smooth ondulations for connection with a connecting pipe or tube, respectively.